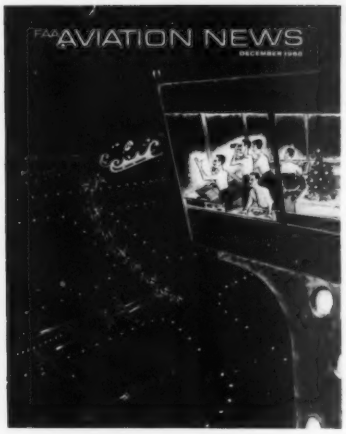
FAA AVIATION NEWS

DECEMBER 1968



COVER

Many strange craft are aloft in the North. For help in recognizing unfamiliar flying objects, see page 12.

FAA AVIATION NEWS

DEPARTMENT OF TRANSPORTATION / **FEDERAL AVIATION ADMINISTRATION** VOL. 7 NO. 8

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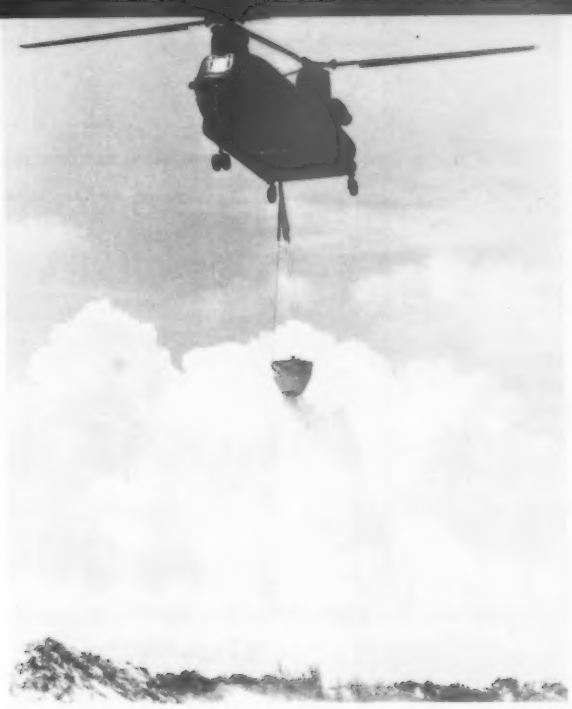


Water cascades down from an Army Chinook during test demonstration in South Vietnam. Fully loaded, the 450-gallon fiberglas bucket weighs about 4,000 pounds, well within the Chinook's lifting capacity. Pilot can dump entire load at once, or in controlled spurts.

DELUGE ON DEMAND

Long retired from an active role in firefighting, along with galloping horses and steam pumpers, the bucket brigade is making a comeback — with the help of aviation.

Modern buckets, made of fiberglas with a capacity of 450 gallons, have been developed by the U.S. Forest Service for aerial dousing of forest fires from helicopters. Six of the king-sized buckets are now being tested by the Army in South Vietnam to douse structural fires caused by enemy action.

The flame-squelching flood is dumped from buckets designed to be filled and emptied mechanically from a hovering helicopter. The entire load can be salvoed in one torrent, or discharged in metered amounts at the discretion of the pilot through a remote control in his cockpit.

Effectiveness of the airborne bucket brigade depends on a readily available water supply, such as afforded by rivers or lakes, or by collapsible water reservoirs trucked into a clearing and replenished by a pump/hose connection with a more remote water source. To fill the bucket, the 'copter hovers over the water supply, tips the container and fills it in a matter of seconds. Depending on lifting capacity, a helicopter can sling one or more of the lightweight buckets fully loaded; for smaller helicopters, the buckets are equipped with removable plastic plugs which limit the quantity of water the bucket can contain. The surplus simply gushes out of the holes.

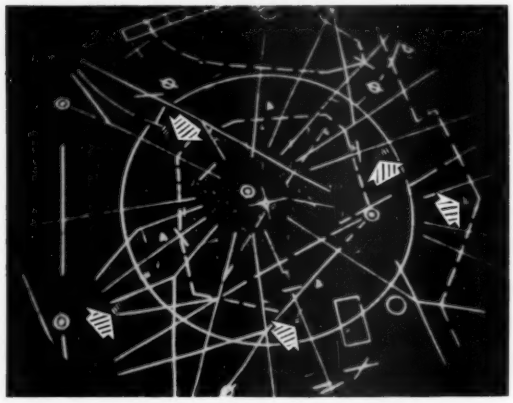
The need for a highly mobile firefighting device in Viet Nam to combat structural fires, one that would not be impeded by narrow, twisting, unpaved roads often choked with terrified people, became urgent during the Viet Cong Tet offensive in January, 1968. Water and helicopters were plentiful, as the chief of the Forest Service foreign aid team stationed in South Vietnam noted. He requested an emergency shipment of six fiberglas buckets of the type used in airborne fire suppression in the Pacific Northwest. In due course the buckets arrived in Saigon, accompanied by three Forest Service experts who would train Army crews to do the actual firefighting.

Above—bucket is filled instantly by dragging it through water. Bucket and sling can be jettisoned by pilot in an emergency. **Below**—black dots on the buckets are plastic plugs which can be removed easily to limit the quantity of water carried to suit the lifting capacity of a variety of helicopters.

The flying firetrucks have been especially effective in Saigon, since the Saigon River is no more than a 90-second flight by helicopter to even the remotest part of the city. The same can be said for many areas of South Vietnam because of the great number of rivers and the widespread irrigation system.

The Forest Service operates 56 fixed-wing aircraft and one helicopter, and has a staff of 46 full-time pilots. During the busy season — June, July and August, when forest fires reach their peak — the Forest Service's "air force" is augmented by a varying number of seasonally employed pilots, plus sufficient backup crews to meet emergency demands for keeping the planes in the air.

New techniques employed by the Forest Service in fighting fire from the sky are being passed on to military and civilian agencies. So far, the aerial bucket brigade has been one of the successful innovations. ■



Left—limited form of area navigation with radar vectoring, now in use in terminal areas served by radar-equipped towers. Video map superimposed on radar scope enables controller to assist pilots with navigational guidance. **Legend:** circles indicate NAVAIDS; solid lines, airways or defined routes; broken lines airspace sector boundaries; crosses, intersections. Arrows point to radar targets. Ladder at upper left is military climb corridor. **Right**—straight line route between Pittsburgh and Akron is compared with indirect airway routing. Airborne computers plot course with inputs from enroute VOR-DMEs.

AREA NAVIGATION

The Shortest Distance Between Two Points

By Robert W. Martin, Chief, Operations & Procedures Division, FAA Air Traffic Service

Throughout the history of aviation, one basic problem has plagued planners and users of our national airspace. That problem is how to provide sufficient usable airspace to accommodate the ever-increasing user demands.

The evolution of navigational aids dramatizes this quest for more and more usable airspace. In the early days of Federal air traffic control, homing beacons gave way to low frequency ranges because more accurate positioning allowed more aircraft to be safely separated within the same block of airspace. In the period following World War II, VHF omni-range (VOR) stations have replaced low-frequency ranges and expanded the airspace by providing more routes, reliability and accuracy. The addition of distance measuring equipment (DME) to the VHF system has provided additional flexibility and position fixing accuracy.

Despite the improvements represented by the present VHF airway system over the old low-frequency system, there are still serious limitations which must be overcome if we are to meet the forecast demand on the ATC system. The main limitation is the fact that present navigational methods result in routes or *airways* which lead either directly toward or away from the station. This creates a convergence or funneling of air traffic and results in a severe limitation on the configuration and the number of routes available between two points (as Deputy Administrator Oscar Bakke pointed out in a previous article).

Effect of Funneling

The same deficiency takes on even more importance when you consider that arrival and departure procedures are based, in large measure, on the same ground stations which serve our enroute structure. This means the funneling effect is compounded by altitude changes for transitioning traffic. That is, the constantly changing altitudes of arriving and departing aircraft make the terminal controller's job more difficult.

The next logical step towards providing more airspace and reducing traffic congestion is the development of a navigational capability that permits accurate route definition on an "area" basis without the constraints of VOR site location or course alignment. This capability is commonly termed "area navigation," which could be described as navigation not confined to flying a radial or track toward or away from the ground station providing the navigational guidance.

At present, the form of area navigation most commonly used is the application of air traffic control radar. In providing aircraft with area navigation, the controller uses a radar scope on which an area chart is superimposed. He steers the pilot from point to point on the chart by giving him radar vectors computed on the face of the scope. This tool, in the hands of the controller, has opened up a great deal of airspace and provided more flexibility. However, this has been accomplished at a tremendous cost in terms of controller workload and equipment requirements.

A point of diminishing returns has been reached in the use of radar for area navigation. As the demand for radar vectoring service increases, the number of aircraft a controller can safely handle decreases because of increased workload per aircraft. More and more of the controller's time is consumed in navigational guidance; leaving less time for the vital function of separating aircraft.

Several airborne systems have been developed which put area navigation capability and responsibility back in the cockpit, where it rightly belongs. Among these are course line computers, pictorial displays, doppler radars and inertial platforms.

The course line computer is an airborne computer which indicates a pre-determined course to fly, on the basis of inputs from VOR-DME signals. Pictorial display links the course line computer to a moving disk seen against the background of an area chart, so that the geographical position of the aircraft is indicated at all times. Inertial platforms provide the pilot with exact ground speed and azimuth data, making possible accurate cockpit computation of position.

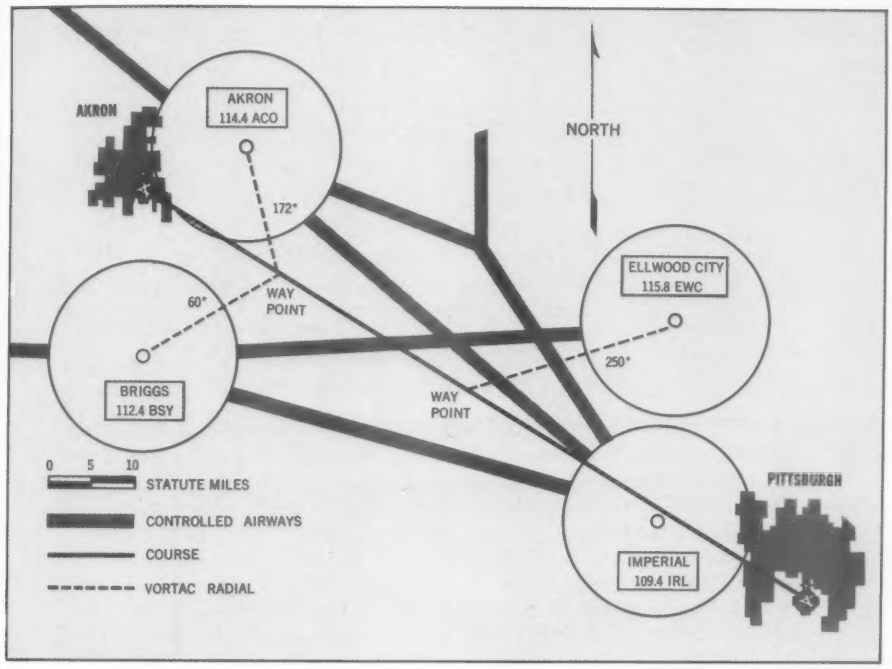
The mere fact that these systems can furnish navigational guidance from one geographical point to another does not ensure their operational suitability in the air traffic control system. Several other factors must be considered. First, system accuracy must be established. We must be assured that protection of the intended route of flight of an aircraft does, in fact, protect the aircraft from other aircraft. This can be ascertained by conducting various equipment evaluations.

Compatible Systems

Next, area navigation systems must be procedurally compatible with other systems currently in use. At some future date, area navigation capability will probably dominate; but in the interim, the air traffic control system must accommodate both area and conventional navigation systems in the same airspace.

Another consideration is cost to the user and to the Government. The user must be assured that his expenditure will buy him improved safety and service. The Federal Aviation Administration must be assured that the best possible service and the greatest safety is provided at the least possible cost.

Another major consideration is com-



patibility with FAA plans for the National Airspace System. Navigation systems which could not be accommodated in the planned automated positive control environment would impose an impossible load on our traffic control facilities.

The azimuth and distance information generated by the present VOR-DME system, when processed by an airborne computer, can be used as the basis of an area navigation system. It has the advantage of being a system which is presently in place and can be used by aircraft equipped with the present *rho theta* navigational equipment as well as those equipped with area navigation capability.

With these factors in mind, we can develop concepts of use, within the air traffic control system, that will enhance the controller's ability to cope with the ever-increasing traffic volume through better use of the available airspace.

The Air Traffic Service has emphasized that our primary objective, in applying area navigation, is not to free pilots from airway flying and permit them to fly randomly where and when they please. In any traffic situation where volume is a factor, regimentation is necessary to provide separation by a ground-based system. However, area navigation techniques hold promise of improvement for both pilots and controllers in all phases of flight activity. To illustrate this, let's look at some of the possible applications.

The most immediate possibility is the establishment of area navigation airways. These airways will probably be charted and flight checked in much the same manner as our existing Victor and jet routes. Parallel and one-way routes can be established to reduce the congestion on our heavily traveled airways. En route traffic can be routed clear of congested terminal areas. Multiple parallel routes may be established between major terminals to permit segregation by aircraft speed and perhaps by arrival airport.

Eliminating Dog-Legs

Each of these parallel routes could transition directly to the approach aids without converging at some primary navigation aid. Even in areas where congestion is not a problem, routes can be established along the shortest and most convenient paths without regard for the constraints of navigation aid locations. Many of the present dog-legs could be eliminated.

By the same token, site selection or relocation of navigation aids can be based on accessibility, favorable terrain and least intereference instead of the more limited objective of meeting one or more procedural requirements, such as nearness to airports, continuation of airway, etc.

Terminal area applications of area navigation promise to be as beneficial as those for en route operations. Hereto, the initial effort will probably be to establish published and flight checked area navigation routes as opposed to random routes. Departure routes can be designed to proceed directly from the runway to the appropriate parallel airway without radar vectoring or passing over primary navigation aids. Parallel departure routes can be established to alleviate speed differential problems. All of these procedures will ease the workload of the controller and speed up the traffic flow.

New Arrival Routes

Arrival routes can be designed to transition traffic directly from en route airways to arrival routes without proceeding over an approach NAVAID or requiring radar vectors. Instrument approach procedures can be shortened, because area navigation provides continuous position information to the pilot and does away with the need to fly over the station and solve time/distance problems.

Instrument approach procedures can be established for many airports that do not have approach NAVAIDs. This has not been possible in the past because these airports have insufficient traffic to warrant the cost of NAVAID installations and maintenance. Now they could be served by area navigation approaches based on nearby NAVAIDs. Of course, the minimum for these approaches cannot be as low as those based on precision aids, such as ILS, but they will be a significant improvement over the service available to these airports today.

By lifting the constraints of NAVAID locations, better noise abatement procedures can be defined. Shorter approach procedures will mean less low altitude flying time and a proportionate decrease in community noise problems.

Holding patterns, in our terminal areas, can be more efficiently placed and more accurately flown. They too have been dependent, in the past, on NAVAID location and course alignment. With area navigation they can be aligned for expeditious transition to approach routes. ■

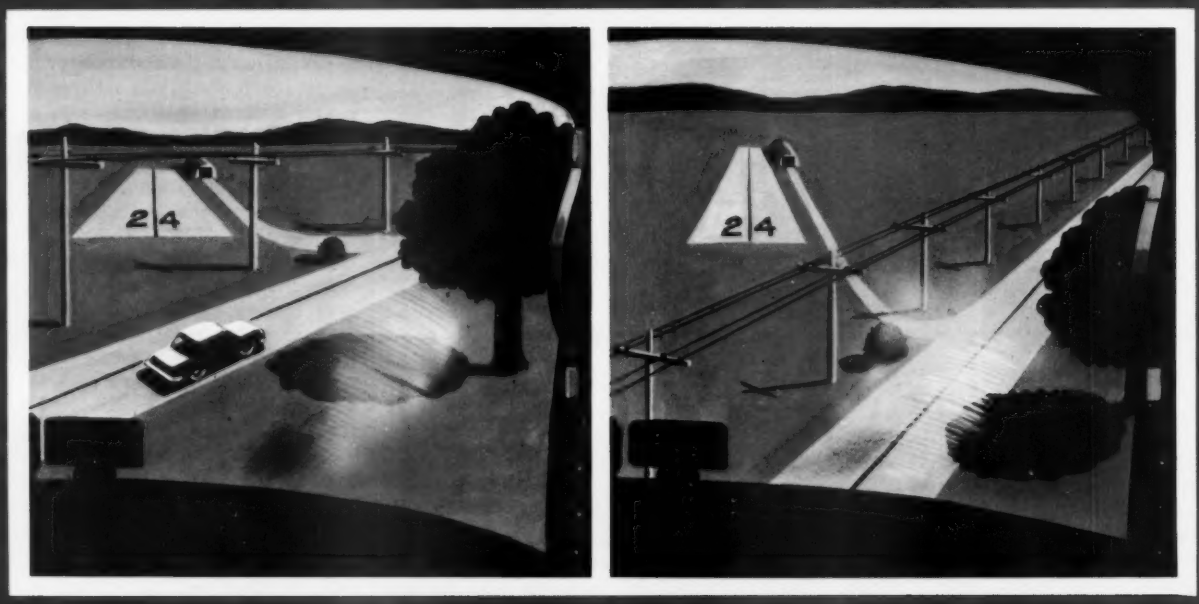
(A second article on area navigation will discuss long range applications of this concept.)

Robert W. Martin

POLE VAULTING for pilots

PERSPECTIVES III

Third in a series on judging spacial relationships in flight. Landing over a line of poles or trees can be safely accomplished by the pilot who has learned how to appraise the apparent movements of unmovable objects.



Clearing a line of power or telephone poles is part of the landing procedure at many small airports. The art of perspective is helpful to pilots who may have difficulty in determining the proper angle of approach over such obstacles. The pilot should have a clear, unobstructed view of the runway threshold at all times during his final approach; if poles or wires appear to project over the threshold, he will strike them unless he changes his flight path. Once the path of descent has been established, the poles and wire should appear to remain stationary in relation to the runway, or sink lower; if they appear to be rising, there is danger of not being able to pass over. It is of vital importance to establish and maintain a safe approach angle while the obstacles are still clearly in view, before they pass out of sight underneath the nose and endanger the undercarriage.

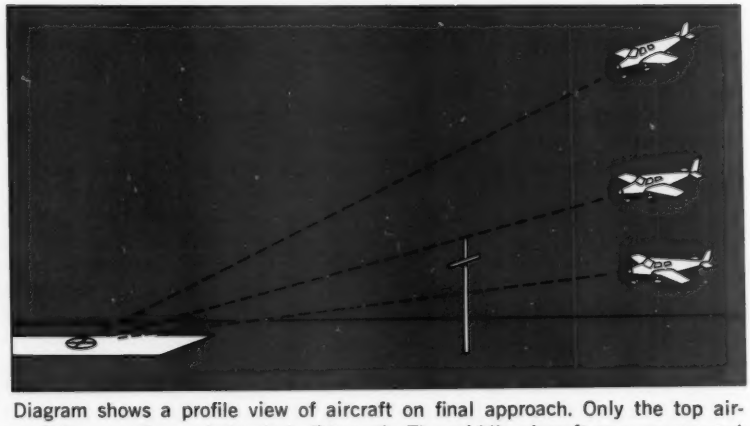


Diagram shows a profile view of aircraft on final approach. Only the top aircraft has a safe, unobstructed glide path. The middle aircraft may or may not clear the pole, and the bottom aircraft could clear only by abandoning his approach path and climbing sharply—an unwise procedure for landing.

MILITARY BIRD ROOST

World's Biggest Used Craft Lot

A portion of the 3,000 acre Military Aircraft Storage and Disposition Center.

Imagine you are dreaming. You look down from the cockpit and spread out below you on the ground are more airplanes than you ever imagined existed. Acres and acres and acres of them! Is it a dream or a mirage?

Neither. You are looking at stored military aircraft—more than 4,000 of them—valued at some $5 billion. Row on row, in seemingly endless ranks, they carpet 3,000 acres of flat, bone-dry desert on one corner of Davis-Monthan AFB, four miles southeast of Tucson. This is the Air Force Logistics Command's Military Aircraft Storage and Disposition Center (MASDC).

Most of the aircraft stored here are returned to service. Others are systematically disassembled and their component parts—engines, engine accessories, pumps, generators, hydraulic struts, instruments, etc.—readied to provide instant backup for operational aircraft in any part of the world.

The aircraft marking time at MASDC are prepared for long-term outdoor storage. Climatic conditions around Tucson, with its modest rainfall, minimum humidity, and low acidic soil content, makes it an ideal aircraft roost. Indeed, the year-around weather is similar to that of the North African desert where the B-24 "Lady Be Good," abandoned by its crew in 1943, was accidentally discovered 16 years later in excellent condition.

MASDC is the central assembly point for Army, Navy and Air Force planes that have been pushed aside by advances in aerial or military technology, or have been declared surplus to the current requirements of the armed forces. Thus, it is not unnatural to see aged C-47s sharing storage space with jet propelled B-47s and B-52s.

In all, there are some 50 different types of aircraft in storage at Davis-Monthan AFB. They include models of the B-47, B-52, B-66, C-97, C-119, EC-121, C-47, C-54, F-100, F-101, F-104, A-1, A-3, C-45, F-8, E-1B, F-9, F-11, P-2, S-2 and T-33, to mention just a few. Many of these will eventually see further action with the military, many will find their way to other goverment agencies—and a very few will be sold to the general public.

The aircraft at Davis-Monthan are grouped into two categories—military/combat and commercial/cargo. Purchasers of military-type aircraft are required by law to reduce the airplane to metal ingots. There is no such thing as "picking up" a nifty WWII fighter such as P-51 *Mustang*, F8f *Bearcat* or nimble AT-6 *Texan* advance trainer.

The picture is almost as gloomy for buyers of commercial/cargo aircraft, for Air Force inventory requirements frequently make it necessary to remove vital components. Since the aircraft may have been "cannibalized" severely, making them airworthy again could run into considerable money.

Almost anyone can bid on surplus aircraft. The only exceptions are minors and military or civilian members of the Department of Defense who are members of the Defense Property Disposal organizations, or members of their immediate families. Aircraft sales are a joint effort between MASDC and the Defense Surplus Sales Office (DSSO) located at 937 North Harbor Dr., San Diego, Cal. DSSO has the responsibility for advertising and administering sales contracts between the Government and the purchaser.

Persons interested in buying surplus aircraft—and anything else in the Department of Defense that becomes surplus—within the U.S. (excluding Alaska and Hawaii), should visit or write to Defense Surplus Bidders Control Office (DLSC-MSB), Federal Center, Battle Creek, Mich. 49016. This is the central point for all information on sales of surplus property and its location. This office maintains a single national bidders list, arranged to record each person's buying interests, both geographically and with respect to the kind of surplus property he is interested in acquiring.

Whenever surplus property in which a person on the list has expressed an interest is placed on sale in his selected geographical areas, the Defense Surplus Bidders Control Office will send him an invitation to bid. This will include detailed information regarding terms and conditions of sale, location of the property, its description, condition, quantity, dates it may be inspected, time and date of bid opening, removal of property, and other details.

Following the above procedures, all sales at MASDC are conducted on a formal basis and designated as either sealed bids or spot bid sales. A brochure on "How to Buy Surplus Property," available from MASDC or DSSO, explains the difference in the two buying methods.

Aircraft and missiles are made available through donation or at low cost to certain designated public bodies and non-profit organizations, expressly for educational, historical, monumental or display purposes.

Complete details on how to obtain such static display aircraft and missiles, and the duties and responsibilities incumbent on the recipient, are contained in the "Aircraft/Missile Donation Brochure," available from Headquarters, The Military Aircraft Storage and Disposition Center, Davis-Monthan AFB, Arizona 85707. Attn: ADR.

Information on the availability of surplus military property for educational, public, and health and civil defense organizations, is contained in two pamphlets available free from the U.S. Department of Health, Education and Welfare, Office of Surplus Property Utilization, Washington, D.C. 20201.

Frank J. Clifford

SHOWING IT LIKE IT IS

Pilots who laughed and learned by watching Harry Bliss and his blunders in ***Density Altitude***, one of FAA's most widely appreciated pilot education films, will be interested in a preview of new agency films released in late 1968.

Popular with flying clubs, schools, and aviation minded communities, FAA films are designed to promote a wider understanding of air safety. All are produced in 16mm color and sound in suitable lengths for TV programming. Running time varies from 15 to 28 minutes.

Safety by the Numbers demonstrates how pilots who move up from single engines to twins can get into serious trouble by carrying over habits learned while flying a single engine aircraft; in particular, the habit of flying by the "feel" of the controls is difficult to overcome. The film shows the pilot why it is easier and safer to fly "by the numbers"—that is, to fly in accordance with the minimum speeds and altitudes recommended by the manufacturer in the instruction book in every new aircraft.

The movie explains that while multi-engine flying provides an added margin of safety in the event of engine failure, it places a serious demand on the pilot's ability to maintain adequate airspeed and altitude. The accident toll of airmen who failed to compensate correctly for loss of an engine is serious enough to make this film a must for new multi-engine pilots to view.

Plane Sense is the story of Bob Mund, a young pilot inexperienced in aircraft maintenance, who learns the fundamentals of owning and operating an aircraft the hard way. Persuaded by a glib salesman to buy an aircraft without first having it checked by a reputable aviation mechanic, Bob finds he has hundreds of dollars in unexpected expenses facing him before he has an airworthy aircraft. By observing his misfortune, the prospective owner learns what to look for in purchasing a used aircraft and how to avoid expensive mistakes.

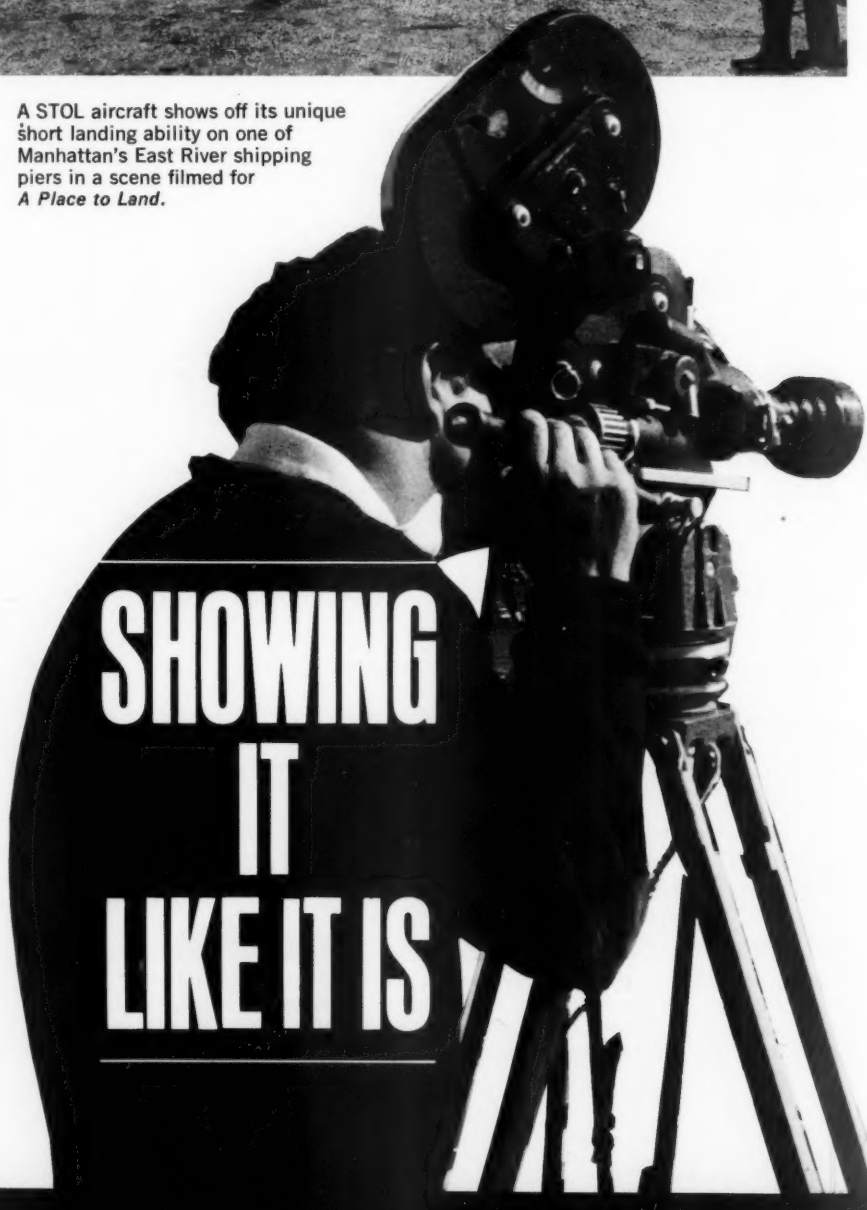
All It Takes Is Once is the story of a pilot who allows the tensions of business, and an irritating delay in departing for his vacation to a fly-in ranch, make him disregard one of the most basic elements in flying—concentration. When he notices, just in time, that he has forgotten to lower his gear on landing, he realizes that he had allowed his mental attitude to jeopardize his safety and that of his family as well.

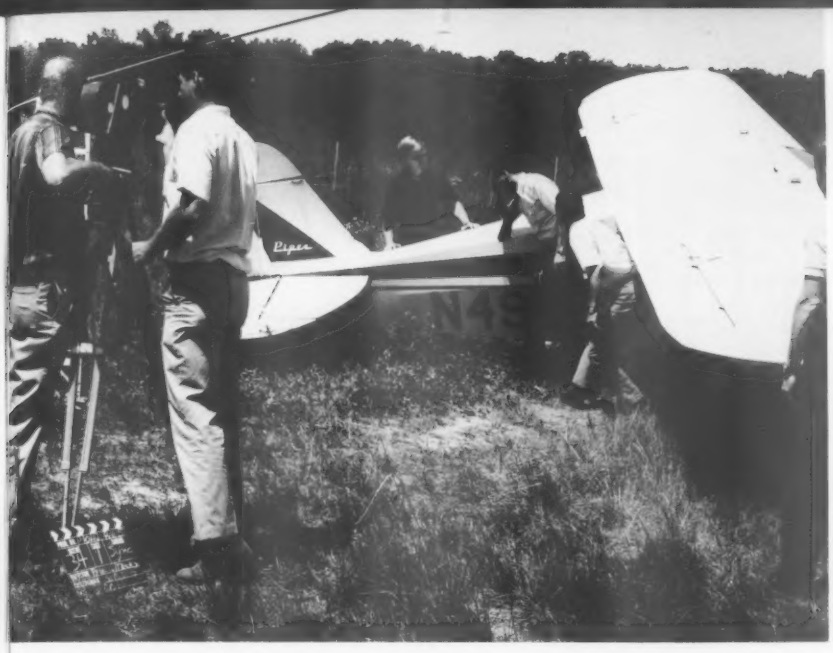
Upon arrival at the ranch, he hears fellow vacationers confess to similar humorous but near-tragic tales about their own experiences while flying under tension.

The audience learns that everyone is subject to tension, but the safe pilot forms the habit of preventing irritations from interfering with attention to detail in flight.

A Plane Is Born documents the production of a new commercial airplane. With the Boeing 727 and Douglas DC-9 as exam-

A STOL aircraft shows off its unique short landing ability on one of Manhattan's East River shipping piers in a scene filmed for *A Place to Land*.





Above—actor Cliff Robertson appears momentarily stunned after a realistic rough landing sequence in *Path to Safety*.

Above—aerial view from *Airports in Perspective* shows importance of good access roads leading to airports. **Below**—camera mounted under tail will photograph landing gear for *Path to Safety*.

ples, the film traces the new aircraft from the drawing board through testing, construction, certification and further testing, and shows how the FAA works with aircraft manufacturers to put a plane into service. Imaginative camera techniques highlight wind tunnel experiments, fabrication, test flights, inspection and final assembly scenes. Engineers, students, pilots and others will find this documentary interesting.

Airports in Perspective explores the subject of the airport as a part of the community. Directed to the civic-minded citizen, the film shows how cooperation between highway builders, home and apartment builders, industrial developers and local governments can help make an airport a welcome addition to the community. The film shows how civic problems such as noise, traffic jams and runway obstructions can be avoided or minimized.

This film is a logical follow-up to two other FAA films about airports: *The Best Investment We Ever Made* (1964), which describes the economic benefits of a general aviation airport to the community; and *It Pays to Stay Open* (1966), which explains the value of low-cost lighting systems to permit night operation.

A Place to Land, released in 1967, documents Operation Metro Air Support, an exciting two-day mock emergency in which FAA and state and municipal agencies in the New York metropolitan area demonstrate the ability of V/STOL aircraft to provide air access to a center-city area. Exciting shots of steep landings and take-offs from piers, streets and parks demonstrate the unique characteristics of helicopters and new STOL aircraft which make them ideal for operating from downtown locations.

A large proportion of each year's general aviation accident toll involves VFR pilots who inadvertently encounter instrument flight conditions and become disoriented. In the new motion picture, ***Stable and Safe***, a young couple returning from a weekend vacation encounter heavy rain and overcast skies, become disoriented, and blunder into a deadly spiral. Luckily they recover, and once on the ground they learn how their panic could have been prevented through understanding of and proper reliance on their plane's instrumentation.

Other popular 1967 releases include *Path to Safety, Charlie* and *Density Altitude.*

In ***Path to Safety,*** a ground school refresher course instructor, played by Hollywood star Cliff Robertson, recalls with his students dramatic incidents which occurred to each as a result of his own "human error." In a series of exciting flashbacks, the class learns that each airman can be his own worst enemy if he allows his proficiency to lapse.

Charlie dramatizes the hazards of drugs, alcohol and flying. Dr. "Charlie" Preston, a physician whose timely decisions and skill have saved many lives, discovers too late that even his seasoned judgment can be dulled by alcohol and an "innocent" cold pill.

Density Altitude accompanies Harry Bliss and his wife Lois on a cross-country flight from New Orleans over the Rockies and the High Sierras. Smugly confident of the power in his new plane, Harry ignores the rising temperatures and field elevations as they travel west and the load of souvenirs in his baggage compartment increases. Harry learns, by a startling experience with a mountain-top strip, how pilots should fly under high density altitude conditions.

FAA general aviation films produced in 1966 include *Wake Turbulence* and *RX for Flight*. Using clever animation, **Wake Turbulence** shows how a trailing mass of disturbed air is created as a by-product of an aircraft wing as it produces lift. Most important, the film suggests how general aviation pilots can learn to avoid the hazards of wake turbulence produced by larger commercial aircraft.

RX for Flight explores some of the aeromedical problems general aviation pilots should understand. In a cause-and-effect manner, this film briefly covers such topics as alcohol, drugs, hypoxia, disorientation and smoking, and shows their effects on the human body as well as the mind.

These films and some 60 others are available from the FAA Film Library in the aeronautical center at Oklahoma City. A complete film catalog will be published in January and may be obtained from the Office of Information Services, IS-30, FAA Headquarters, Washington, D.C. 20590, or from your nearest FAA Regional Public Affairs Office.

There is no charge for the use of FAA films. The only restriction is that they must be shown in their entirety and on a nonprofit basis.

Nancy Koplinka

Weather Wise and Plane Safe

Man with a plan. Joe Cirillo is in demand at Midwest pilot safety sessions.

Breathes there a pilot who never to himself has muttered as he hung up the receiver after a weather briefing, "What was that all about?" All he really wanted to know was whether he could get from Petulia to Arcadia without running into rain and he couldn't care less whether Visalia had a warm front or a cold rear.

The weather briefer, on his part, often isn't sure that the caller has absorbed much of the extensive data that has been fired at him in the abbreviated language of meteorology. But unless the pilot asks for clarification he is expected to understand fully all of the weather phenomena predicted along his intended flight path.

In actual practice, many pilots retain only a small portion of their weather briefing. Even if they are capable of visualizing all of the assorted phenomena, and applying it to their flight planning, unless they have a written record to refer to en route they may be at a disadvantage when it comes to gauging the effect of new weather reports as they come in.

Weather briefing is just as important for VFR pilots as it is for those who are instrument-rated—perhaps even more so, for a very significant proportion of general aviation accidents involve pilots who fly into weather situations they cannot cope with and should legally have avoided. Here ignorance is no excuse, and it could be fatal. Of the 573 fatal accidents in general aviation in 1966, 187 involved weather as a cause.

A practical technique for helping pilots absorb and retain the full weather briefing has been developed by Joe Cirillo, a flight service specialist at Indianapolis' Weir Cook Municipal Airport. Cirillo, a pilot as well as a veteran of more than 13 years with FAA, has been confronted with the problem—and the solution—from both sides of the fence. His solution is one that could save many lives and prevent many needless aircraft accidents involving weather.

Orderly Procedure

Cirillo has suggested that all pilots can improve their weather briefing receptivity if they will do two things: (1) memorize a form of pilot-to-briefer transmission that will elicit the desired information, and (2) provide themselves with a weather form sheet consisting of a map and data blocks in which they may enter the appropriate weather symbols as they receive them.

The weather briefer can do his job more effectively if he is told, preferably in this order, the qualifications of the pilot (student, private, commercial, instrument-rated or not); time and place of departure; special equipment, such as de-icers (when this is pertinent); the N number and type of aircraft; proposed route of flight; destination and estimated time of arrival.

Example: "I am a private pilot, instrument rated. I want to make a VFR trip in

The shape of trouble aloft. FARs require pilots to obtain weather information before flight.

a BE35. I plan to depart Indianapolis at 1300Zulu for Atlanta, Ga., via Louisville-Crossville. Aircraft has de-icers, but is not IFR qualified. Identification of aircraft is N1234MIKE. Estimated time of arrival, 1615Zulu."

After this transmission, the weather briefer knows exactly the type and extent of weather information he should supply. The use of Zulu time precludes any confusion over time zones. He is not burdened with excess information, such as the pilot's name, and he has no need to ask any questions. He can proceed immediately with his briefing.

The standard weather briefing covers a general overall picture (synoptic situation), and four major topics: EXPECTED WEATHER ENROUTE, TERMINAL FORECASTS, WINDS ALOFT forecast, and special phenomena, such as thunderstorms, icing, fog, turbulence, etc. If the pilot has provided himself with a printed form separating these four types of information, he will be able to note everything down quickly and in place. He must know the commonly used weather symbols, of course, or refresh his memory on them beforehand—they could be printed on the margin of his briefing sheet.

Cirillo also suggests that the pilot's weather briefing form contain a map outlining the 48 adjoining states, so that the synoptic situation can be recorded.

Example of a briefing: Synoptic—"There is a slow moving warm front from a low in St. Louis through the south central tip of Indiana thence through northwestern Virginia and off the coast of central North Carolina. (Pilot encircles an "L" over St. Louis on his map and extends an easterly line marked "WRM".)

"A cold front extends from the LOW in St. Louis running through the western edge of Kentucky, northwestern Alabama, and into the Gulf through northwestern Florida." (Pilot draws southeasterly line to Gulf, marks it 'COLD'.)

"Through Indiana, mostly 45 hundred broken variable scattered becoming six thousand broken variable overcast in Kentucky." (Pilot marks 45 ⊕V⊕ over Indiana on map and 60 ⊘V⊕ over Kentucky.)

"Tennessee ten thousand broken with scattered light rainshowers. Georgia showing scattered cirroform clouds. Radar shows there have been few thunderstorms in eastern Alabama and western Tennessee." (Pilot marks 100 ⊕, ⊘RW over Tennessee and ⊘CI over Georgia, marks 'Ts' along shower line.)

A Place for Everything

Although the synoptic situation is usually several hours old, it is very valuable for indicating the general weather patterns the pilot must reckon with. Next he will be given the FORECAST WEATHER ENROUTE including reporting ceiling, clouds, visibilities and obstructions to visibility such as haze, fog, rain or snow, followed by NOTAMS. (He enters weather symbols in Box I.)

Next he will be given the TERMINAL FORECAST, giving the entire sequence report for his destinations—in this case, Louisville and Atlanta. (Pilot notes down appropriate symbols in Box No. II.) "Louisville—ceiling 8,000 broken occasionally scattered winds three four oh degrees at 15 becoming by 1600 Zulu ceiling 6,000 broken occasionally ceiling 2,000 overcast visibility one (mile) thunderstorm moderate rainshowers. Atlanta"—etc.

WINDS ALOFT are given next, for 3,000—5,000—7,000—9,000—and 10,000 feet. Winds at higher altitudes are given on request (Box III).

Finally the weather briefer will report on possible hazards to flight such as freezing levels, thunderstorm areas not associated with fronts, fog areas, or turbulence, (Box IV) and the briefing is concluded.

Weather briefing forms such as those described in this article have been used successfully by FAA's Indianapolis Flight Service Station to help pilots become adept at handling weather reports. Presence of a form in the cockpit is incontrovertible proof of compliance with Federal Aviation Regulation Part 91.5, which states that a prerequisite to flight before leaving a local area is an adequate weather briefing.

Not only students and new pilots, but all airmen for whom mastery of weather information is a problem are advised to resort to written forms, similar to those devised by Joe Cirillo, as a means of becoming "weather wise and plane safe." ■

Cirillo's plan provides pilots with synoptic situation map and vital weather data.

CURRENT ENROUTE WEATHER I		TERMINAL FORECAST II	
LOCATION	REPORT	LOCATION	FORECAST
IND	M60⊕/-⊕10 60/51/3410/1002	LOU	C80⊕ OCNL ⊕ 3415/1600Z
LOU	55⊕12		C60⊕ OCNL C20⊕ 1 TRW
CSV	M90⊕6RW-H	ATL	⊖ 1700Z C100⊕ SHK 1900Z
ATL	1-⊕.5HK 68/59/2407/995		C80⊕ OCNL C10⊕ 1 RW+

WINDS ALOFT FORECAST III		TSTMS-ICING-FOG-TURBC IV	
LOCATION	FORECAST	LOCATION	PHENOMENA
IND	3-3410/5-3515/7-3517/10-3625	50 W LOU	SOME BLDUPS
LOU	3-3109/5-3212/7-3316/10-3526	100 W CSV	RW & BLDUPS
ATL	3-2104/5-2210/7-2414/10-2419		

Mr. C. Does His Thing

If I've told him once, I've told him a hundred times: "Mr. C, you're asking for trouble." But will he listen to me? He will not. He goes right on flying in that obsolete crate of his in all kinds of weather over some of the most foresaken terrain in the world without any instrumentation to speak of and without any communications or navigation equipment whatsoever. And so, he gets in trouble. Lucky for him I was around to help bail him out.

I'm working the late shift on Christmas Eve in the Fairbanks Air Route Traffic Control Center. In fact, it seems like I'm always working the late shift on Christmas Eve . . . and New Year's Eve . . . and what have you. When the watch supervisor makes up the holiday work schedule, I'm always the first one he thinks of. Sometimes I think I never should have left the Stapleton tower.

Anyway—to get back to what I was talking about—it's around 11:30 p.m. and I'm at the radar with a fellow named Herman Humperdink. No kidding, that's his real name. Herman is a bachelor and doesn't have any kids, so what does he care if he works Christmas Eve. Me—I've got five kids. I should be home trimming the tree.

But that's enough of that. I mean, I don't want to sound like a chronic malcontent. Let's get back on the subject.

Things are slow at the center this late on Christmas Eve. You know, really slow. Only a few planes are up in the whole center area and none at all in our sector. Anyone who's going anywhere for Christmas has already gone. Herman and I just sit there, smoking and talking and watching the bright line on the radarscope go around and around. I mean, it isn't much of a Christmas Eve even for Herman who, like I said, is a bachelor and doesn't have any kids.

Then, all of a sudden, we get some action. The radar picks up a lone target moving south over the Arctic Ocean toward the north coast of Alaska. At first I get real nervous, thinking maybe it's one of those intercontinental ballistic missiles fired by some weirdo who's out to ruin everyone's Christmas Eve. You know, like in the movie "Dr. Strangelove," only for real. But after watching the target for maybe 30 seconds, both Herman and I agree that it's moving too slowly to be a missile. Or if it is a missile, we're in better shape defensewise than anyone in the Pentagon thinks because, I mean, you could knock this thing down with a snowball. It's flying that low and that slow.

So after deciding that the radar blip is an aircraft of some sort, it comes to me like a flash, as they say, who the pilot probably is. And if he is who I think he is—that is, Mr. C—it can only mean one thing: He's in trouble.

Well, as I said before, I'm not surprised, not at all. I've seen it coming for years. Mr. C may be a prince of a fellow but he's not one of our more progressive pilots. He's the kind of a guy who thinks he can fly once a year and maintain his proficiency. Also, his idea of direction finding equipment is a magnetized needle stuck through a cork floating in a pan of water, which probably accounts for the fact that he's a hundred miles or so off his usual course and, apparently, hopelessly lost.

But no sooner do I decide that Mr. C is lost, than he reaches the same conclusion himself. Bless his heart. He begins flying a triangular pattern to the left, two minutes on each leg, which is an internationally recognized MAYDAY signal for aircraft not equipped with radio or with radio inoperative. I'm surprised Mr. C even knows about it. And all the time, I'm sitting there wishing he had a radio so I could call him up and say "I told you so." You know me, I'm as vindictive as the next guy.

But the "I told you so's" will have to wait for a while. Right now my problem is to help Mr. C get out of the pickle he got himself into without my help. I call up our flight service station on the airport at Pt. Barrow and get Harry Humperdink, who is Herman's twin brother, believe it or not, and is also a bachelor, which can't be all that great a life in Pt. Barrow given the girl situation up there and all.

I read Harry in on our problem—or rather Mr. C's problem—and ask if there is anyone at the airport who could fly out and lead the old gentleman home. He says we're in luck because the crew of an Eskimo Airlines DC-3 was just in for a weather briefing, filed a flight plan for Nome, and is on the runway waiting to take off.

So I get the DC-3's frequency and give the pilot a rundown on the situation. Eskimo Airlines isn't an airline really but a commercial operator of sorts which hauls whale blubber and such between Nome and various other cities in Alaska. It's a pretty marginal operation from a financial standpoint, and all the time I'm talking I can almost hear the wheels going around in the pilot's head as he computes how much fuel this is going to cost him.

The pilot—a fellow named Rodney Wingover—turns out *not* to be one of Alaska's greatest humanitarians. He reads me his company's profit and loss statements for the past five years—showing more loss than profit, incidently—and says the cost of the extra fuel will put his firm in the red again this year. I tell him he can charge the extra fuel to my Bank-Alaska credit card and give him the number and he seems happier although I know that he knows what Bank-Alaska will do with the bill when it arrives.

Anyway, the whole rescue mission goes like a piece of cake and hardly justifies writing up a flight assist or "save," as we call them, except for the fact that I'm up for promotion. I give the DC-3 a radar vector

to where Mr. C is still flying that triangular distress pattern, and I must admit that the way he's cutting those 120 degree turns is a thing of beauty to watch and shows that Mr. C hasn't lost all of the skill which made him, in his day, one of the best bush pilots in the north. The DC-3 pilot calls in once about 20 minutes out of Barrow to say that he's burning even more fuel than anticipated because of strong headwinds and I tell him don't worry as Bank-Alaska will take care of it. Then he calls again about 30 minutes out to say he has Mr. C in sight. In fact, he says, you can't miss him because of that bright red light on the front of his aircraft which is a rather recent addition, by the way, and shows that Mr. C is not entirely resistant to technological advances.

The DC-3 leads Mr. C to Barrow, where he lands and gets a weather briefing from the FSS people and also (probably for the first time in his life) files a flight plan which I understand has to be seen to be believed. I ask Harry Humperdink to ask Mr. C to stop by the center on his way south as I want to talk to him about the importance of sound preflight planning, among other things, but Harry comes back on and says Mr. C can't spare the time as he's already way behind schedule.

So I'm more than just a little surprised when I come off a coffee break about a half an hour later and hear the sound of approaching bells, which means Mr. C is coming by after all. That's one thing about Mr. C. You can hear him coming 19 miles away because of those darn bells. He calls them his aural collision avoidance system and wants to know why the Government doesn't require them on all aircraft, which is a question I've never been able to answer to his complete satisfaction.

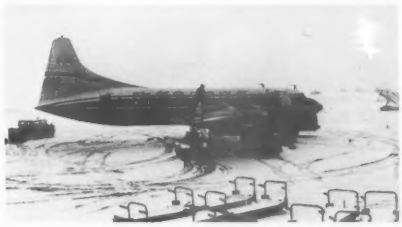
I leave Herman to watch the radar and run out to the parking lot just as Mr. C gets there. He doesn't land actually but makes a low, slow pass and drops a package containing presents for the wife and kids as well as something spiritual for Dad. Then he gives me a big wave and flies off to the south, and he's really moving.

I stand there for a long time watching the sky after he's gone and the feeling of admiration I have for the man is tempered only by the fear that he'll kill himself some day flying that Wright Brothers reject of his. Still, I know there's nothing I can do about it. In fact, I don't believe I would do anything if I could. This Christmas Eve flight of Mr. C's is "his thing," as the kids say now, and I would be the last one in the world to stop a guy from doing his thing.

John Leyden

After nearly 15 years as a gimlet-eyed newsman who has seen the worst and the best of things, John Leyden still affirms stoutly: "Yes, Virginia, there is a Santa Claus."

BRIEFS



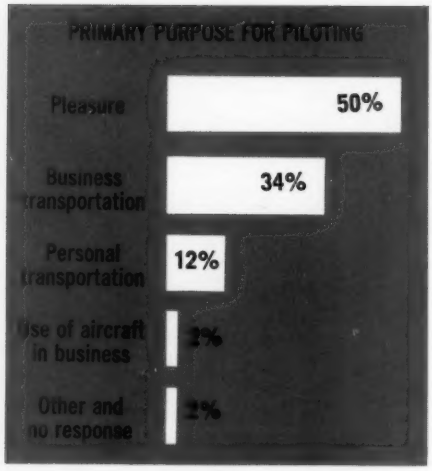
• A MIXTURE OF GLYCOL AND SAND might be the combination that takes the menace out of ice-slick runways. FAA will evaluate the use of a glycol-base de-icing fluid on runways at Dulles International Airport in February. Limited tests last winter by the Port Authority of New York indicated that dampening sand with the same type of de-icer fluid commonly used to de-ice aircraft surfaces speeds up the return of runways to active use. The de-icing agent is mixed with ordinary sand in proportions of three to five per cent, depending on the weather and degree of runway icing being treated.

• FAA IS CONSIDERING AMENDING PART 141 of the FARs to provide for more effective evaluation by the agency of the quality of instruction given by approved pilot schools, at any stage before, as well as after graduation. Highpoint of the proposal is amendment to assure that at least eight out of the 10 most recent graduation. Highpoint of the proposal is an amendment pilot training course who apply for a pilot certificate or rating within 60 days after graduation pass FAA tests on the first try.

The amendment also provides that in any pilot school curriculum or approved pilot training course at least eight students out of the 10 most recently checked show competence in the items of the school curriculum or course they have covered thus far. Comment on the pro-proposal should be submitted in duplicate to: Federal Aviation Administration, Office of the General Counsel, ATTN: Rules Docket GC-24, 800 Independence Ave., S.W., Washington, D. C. 20590, on or before Jan. 22, 1969.

• DECEMBER 31 IS THE DEADLINE for entering FAA's sixth annual Aviation Mechanic Safety Award program. Aviation Mechanics who have developed new safety ideas, better ways to perform inspections, or who have consistently demonstrated an usually high level of professionalism in 1968 are eligible. The mechanics themselves, or others who know about their achievements, may submit entries. Cash prizes donated by industry, plaques, and citations will be awarded at the national, regional, and state levels.

Two national grand prize winners will be selected--one from an air carrier, and the other from general aviation-and each given a $500 check, plus all-expense trips for themselves and families to Washington, D. C. where the awards will be made. FAA Advisory Circular AC 60-2E, containing full details, is available free from any FAA field facility, and also from: FAA's Special Projects Division, IS-30, Office of Information Services, 800 Independence Ave., S.W., Washington, D. C. 20590.



FAA STUDY PROFILES THE TYPICAL PRIVATE PILOT

About 49 per cent of the 250,000 pilots in the U. S. holding private licenses fly more than 50 hours a year. Moreover, only 21 per cent of the pilots log more than 100 hours a year, little more than half (55 per cent) have more than 250 hours total flight time.

This is a sampling of the facts and figures contained in an FAA-sponsored study carried out by Ohio State University which make up an interesting "portrait" of the U. S. private pilot.

The FAA report, "Study to Determine the Flight Profile and Mission of the Certificated Private Pilot," was undertaken to learn how private pilots use their aircraft (mission) and how complex an operation they perform (profile).

FAA intends to use the information derived from this and other similar studies to help develop an improved certification program.

A random sampling of the report shows:

- Private pilots are grounded most often by a shortage of money, time, and available aircraft. But 60 per cent reported that they had not gone more than three months in a row in the 24 months preceding the survey without logging some flight time. Twenty-six per cent had not missed a single month in the last 24.
- Pleasure, business transportation, and personal transportation, in that order, are the chief reasons private pilots fly.
- About half (44 per cent) usually carry one passenger.

The report, AD 675 818, is available from the Clearinghouse for Federal Scientific and Technical Information (CFSTI), Springfield, Va. 22151, for $3.00. Orders should include title, "AD" number, and check or money order made out to CFSTI.

Civil, Criminal Penalties Invoked For Examination Abuses

Investigation of irregularities in the use of airman examinations have led to at least 25 violation actions against individuals over the past year, including criminal action by the Department of Justice.

Based on evidence covered by FAA investigators, the U.S. District Court for the Northern District of Texas in Fort Worth last month convicted two privately employed flight instructors—James L. George of Mineral Wells and Claude D. Lewsader of Amarillo—for conspiring to defraud the Government by falsifying airman certification records. Each was fined $500 and given a 13-month suspended prison sentence. The two men are the first to be convicted under U.S. criminal statutes for the falsification of airman certification records.

FAA regulations provide for civil enforcement proceedings against anyone who copies or removes written test materials; gives or receives test information; takes a test in behalf of another; uses unauthorized materials in taking a test; or has unauthorized posession of test materials. These irregularities are subject to FAA civil penalties up to $1,000 per offense, as well as suspension or revocation of airman certificates and school operating certificates. Under certain conditions, criminal action may be taken by the Department of Justice.

To date in the current investigation, there have been 16 cases in which airman certificates have been revoked by FAA or surrendered voluntarily at the agency's request. One flight training school also has had its FAA certificate revoked.

The agency has also secured temporary injunctions against a publisher of airman training materials and an airman training school. FAA is asking civil penalties of $24,000 against the latter. Officials are intensifying security measures regarding the dissemination and handling of examinations, as a means of insuring the safety of all who fly.

50 New Reports on FAA Aviation Research Projects Published

A summary of some 50 selected research projects undertaken during fiscal year 1968 by FAA's Systems Research and Development Service is now available in a 218-page report, complete with diagrams and illustrations.

"SRDS Program Goals, Achievements and Trends" (AD 674 412) may be obtained for $3.00 a copy from the Clearinghouse for Federal Scientific and Technical Information (CFSTI), Springfield, Va. 22151. Checks or money orders should be made payable to CSFTI. Order should include title and "AD" number.

Included in the condensed abstracts are reports on: "Enroute WX Analysis and Prediction", "Computer Aided Approach Spacing (CAAS) System", "Analysis of Aircraft Wake Turbulence", "Aircraft Arresting Systems", "Control of Birds Around Airports", "Snow Removal Techniques", "VORTAC Area Navigation", "Ceiling and Visibility Systems," and "Air Traffic Control Terminal Automation."

The report also gives the names of each of the program managers, their phone number and FAA mailing address.

New SST Appraisal Group Named

A new technical committee has been formed to assist FAA's Administrator and the Director of Supersonic Transport Development in evaluating Boeing's new SST design, scheduled for submission to FAA by Jan. 15, 1969.

The high-level group consists of: Dr. Raymond L. Bisplinghoff, professor and head of the department of aeronautics and astronautics, Massachusetts Institute of Technology, chairman; Dr. Arthur E. Raymond, retired Senior Vice-President (engineering) of the former Douglas Aircraft Co., Inc., and now a consultant and member of the Research Council of the Rand Corp.; and Dr. Ernest E. Sechler, Professor of Aeronautics and Executive Officer of the Graduate Aeronautical Laboratories, California Institue of Technology.

ATIS Procedures Are Changed

Pilots are no longer required to tell tower controllers that they have received Automatic Terminal Information Services (ATIS) broadcasts. Previously pilots had been asked on their first contact with the tower at major hubs, whether they had received the prerecorded ATIS broadcasts on runway in use, altimeter setting and other routine information about the airport and local traffic.

Under the new procedures, which will eliminate some unneeded voice contact, controllers will assume that pilots have received the broadcast unless they indicate otherwise.

FORUM

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• Head and Shoulders

The August issue of *Aviation News* had a very well done article on stewardesses ("The Sky Girls") but I would like to offer a correction. The article refers to a "bronze plaque" in the lobby of our stewardess training center.

Actually, the memorial to Ellen Church takes the form of a bronze head and shoulders likeness of the world's first stewardess mounted on a green marble stand. The plaque mentioned in the article was one of several made for presentation to other airlines on behalf of the stewardess profession.

W. L. Curzan
United Air Lines

• Career on Wings

I am a full time college student who hopes to enter commercial aviation. I seem to recall seeing mention of a government loan program that might help me realize my ambition. I would appreciate any information you might have on this subject.

St. Paul, Minn.

The Department of Health, Education and Welfare has a program for guaranteed student loans. Aviation training is included. For complete information write to the U. S. Office of Education, Bureau of Higher Education, Division of Student Financial Aid, Washington, D. C. 20202.

• Book Nook

The article "Look Behind the Post" in the September *Aviation News,* which I understand was suggested by Myrl C. Rupel's book "See and Be Seen", interested me very much.

How can I obtain a copy of this book?

New York, N. Y.

The book is available from Aero Publishers, Inc., 329 Aviation Road, Fallbrook, Calif. 92028. The price is $2.95.

• Hot "Socks"

If a small steam line were run to the approach end of runways and imbedded so it could exhaust into the atmosphere it would give a landing pilot a much more accurate indication of the wind at the actual point of landing. Your engineers could advise on this possibility.

Conventional wind socks and other indicators are usually located at some distance from touchdown areas, and control towers depend on equipment that also might be still farther from the point of touchdown. Even one jet of steam located in the center of a runway or at an intersection of two runways would give a landing pilot a really good indication of wind direction.

Nick F. Senter
Lookout Mountain, Tenn.

Your idea is good, but running any type of underground conveyor, such as pipes, electrical circuits, etc., to the runway ends from a primary source is expensive to install and maintain. This is beyond the financial ability of the majority of airport owners and operators.

Wind direction indicators on uncontrolled airports have long been a problem. FAA is looking into the possibility of developing production specifications for an efficient, inexpensive wind and landing direction indicator. The agency is also studying possible use of inexpensive wind socks at the approach end of runways at airports having unusual wind conditions.

• Pioneer Flight Service Station

I have been told that the Utica FSS is the oldest in the nation. Is this true?

As a long-time resident of these parts I'd be interested in knowing something about its history.

Utica, N. Y.

Utica is one of the oldest stations in the FAA system. It was part of the original 19-station cross-continent airway set up by the Post Office Department in 1919. In 1927, Utica was transferred to the Department of Commerce. It was one of the first stations to use air/ground radiophone in 1928.

Utica FSS is now one of the 381 FSSs or Combined Station/Towers in the national system. A growing aviation center, Utica's flight services increased from 39,811 in calendar year 1967 to 62,489 in fiscal year 1968.

• Tail Tales

Do Advisory Circulars 61-27 and 61-16 contradict each other? "Instrument Flying Handbook" (AC 61-27) states: "The slipstream striking the elevators in a downward direction creates a *negative* angle of attack for the elevators and causes them to exert a negative lift."

However, figure 7 on page 49 of the "Flight Instructor's Handbook" (AC 61-16) depicts an elevator producing *positive* lift at a positive angle of attack with aft center of gravity loading.

Shouldn't figure 7 merely show less negative lift being produced at a decreased negative angle of attack with aft CG loading?

Kenneth A. Taggart
Pensacola, Fla.

The function of the horizontal tail surfaces of an airplane in cruising flight varies with aircraft type and flight conditions. Some older aircraft have cambered horizontal stabilizers, which contribute lift in most flight situations; most newer planes are designed for a down-load on the horizontal tail surfaces under normal flight conditions.

For maximum efficiency, the horizontal surfaces should operate without an up or a down load in cruise. This would be an ideal situation, but it is rarely attained in actual flight. An airplane that is rigged for neutral tail loading in its normal center of gravity condition may require a down load on the tail to maintain level flight when loaded forward of its normal CG condition, and lift from the tail when loaded aft of its normal CG condition.

It should be noted that a positive angle of incidence in the horizontal tail surfaces does not necessarily indicate that lift is produced, because of the downward thrust imparted to the air by the lifting action of the wing.

• Time Also Flies

I received the October issue of *FAA Aviation News* on the 17th of the month, and was chagrined to note the expiration date to comment on airport restriction proposals ("FAA Weighs Busy Airport Restrictions") was October 9. Why wasn't I given time to comment?

Lafayette, La.

The October issue of FAA Aviation News was printed on September 30, shortly after the information concerning the airport restriction proposals was made available. The article was published in the hope that it would reach some, if not all, readers in time to permit a comment. Every effort is made to enable readers to participate in proposed agency rulemaking, and we are sorry that we did not succeed in your case.

• Our Pleasure, Sir

Helpfulness of flight service station folks is hardly unusual news. However, just to add another bit, I would like to tell you about an occurrence at Mason City, Iowa.

We put down there in our Cessna *Skylane* in mid-morning Sunday because of a combination of steadily increasing head winds and some radio difficulty. While gassing up and tying down, I checked to see if a radio technician might be available and was told there wasn't a chance before Monday.

Then we went over to the flight service station to get the latest readout on the weather. In the course of confirming continuance of bad wind conditions, I mentioned the radio trouble. Before I knew it, the flight service station folks had called a radio man and arranged for him to come in Sunday afternoon to take care of my problem.

They then suggested a delightful nearby resort where we could spend the evening, and made a call to arrange for our transportation. By the next morning both radio and weather were in order and we went off feeling most grateful for the friendly concern of the Mason City FAA gentlemen.

H. M. Jacobs
New York, N. Y.

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